DOCUMENT RESUME

ED 345 893 RC 018 667

AUTHOR Sponder, Barry; Schall, Dennis
TITLE The Yugtarvik Museum Project: Using Interactive Multimedia for Cross-Cultural Distance Education.
PUB DATE Apr 90
NOTE 9p.; This journal is no longer published.
PUB TYPE Journal Articles (080) -- Reports - Descriptive (141)
JOURNAL CIT Academic Computing; p6-9,42-44 Apr 1990

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Alaska Natives; Art Education; Computer Software; *Cross Cultural Studies; Distance Education; Elementary Secondary Education; *Experiential Learning; Higher Education; Instructional Materials; *Interactive Video; *Museums; Teacher Education
IDENTIFIERS *Apple Macintosh; *Yupik Eskimos

ABSTRACT

Teachers and students at the University of Alaska-Fairbanks developed an interactive Macintosh-videodisc program that features the exhibits of the Yugtarvik Yup'ik Eskimo Museum in Bethel, Alaska. The exhibits teach people about many aspects of traditional Alaska Native culture. The videodisc program carries both Yup'ik and English audiotracks, making it useful for bilingual audiences. Apple's HyperCard program allows users to develop stacks of index cards on a computer screen that can be manipulated and programmed in many creative ways with a minimal amount of technical knowledge. It also can be interfaced with interactive multimedia such as videodiscs. Funding for the project was difficult to obtain because of lack of university support. Eventually a company that was developing a commercial videodisc for tourists offered unused time on their videodisc. University students who were enrolled in a course on using computers in schools developed HyperCard stacks based on the Bethel Yugtarvik Museum's displays and added animation using VideoWorks II and Studio 1 software. A media specialist videotaped exhibits at the museum, and the edited version was converted to a videodisc. The Hypercard stacks and the videodisc were connected using a Mac Plus computer and a Pioneer 4200 videodisc player. The Yup'ik computer applications are prepared for placement in rural Alaska villages to augment college distance education courses throughout the state. (KS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED345893

The Yugtarvik Museum Project: Using Interactive Multimedia for Cross-Cultural Distance Education

Barry Sponder and
Dennis Schall
University of Alaska-Fairbanks, Kuskokwim Campus

Recent developments in the education of Alaska Native students have been driven by cultural, social, and economic forces first awakened by the building of the TransAlaska pipeline during the 1970s. Despite the best efforts of western educational institutions, programs for Native students usually have been neither culturally relevant nor adapted to the Alaskan environment. To address these shortcomings several teachers and students at the University of Alaska-Fairbanks, Kuskokwim Campus, have developed an interactive Macintosh-videodisc program utilizing the exhibits of the Yugtarvik Yup'ik Eskimo Museum in Bethel, Alaska. The program is designed for use in an on-campus teacher preparation program and as part of the distance delivery of college courses to rural areas of the state.

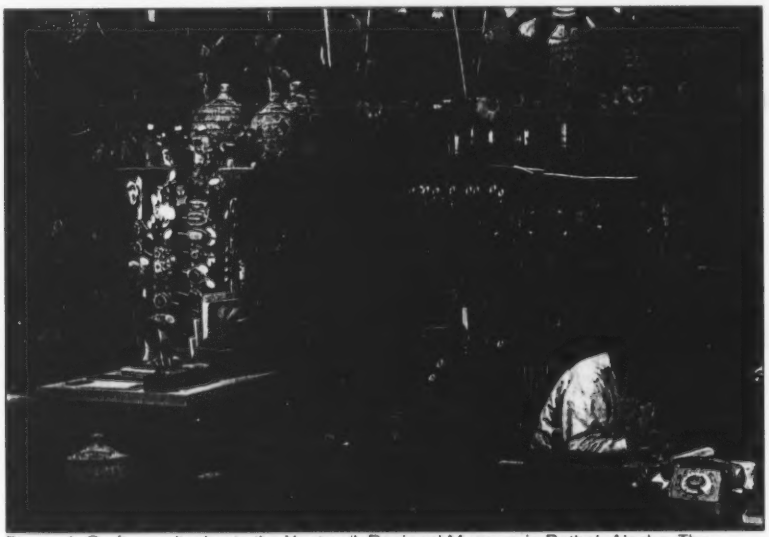

Figure 1: Crafts on display in the Yugtarvik Regional Museum in Bethel, Alaska. The museum has the largest collection of Yup'ik Eskimo art in the world.

One of the often-overlooked strengths of computer technology is the nearly unlimited number of applications available to people of different cultures. From Thailand to Saudi Arabia, Nepal to Nigeria, computers speak Arabic, display Sanskrit characters, control irrigation canals in Bali, and teach people about an ancient Chinese emperor who lived 2,000 years ago. (Chen, 1989) While people worldwide are using computers for their own purposes and often in their own languages, many minority cultures in the United States, such as Alaska Natives, have been slow to benefit from the extraordinary power that computer technology offers.

At the University of Alaska-Fairbanks, Kuskokwim Campus, we have successfully transformed the Apple Macintosh into a "Yup'ik Eskimo computer" that is programmed by Eskimo students, controls a locally-developed videodisc, speaks Yup'ik, and teaches people about many aspects of traditional Native culture. Additional Yup'ik computer applications are being prepared for placement in rural Alaskan villages to augment college courses that are distance delivered from university campuses throughout the state. Perhaps the greatest accomplishment of this project is that it exists at all. It has been a challenge to overcome both a lack of funding and an attitude of indifference by several university colleagues and administrators. While many Alaskan educators have called for more culturally-relevant, student-directed instruction for Alaska Natives (Barnhardt, 1979), the Yugtarvik Museum Project is the first interactive program specifically designed for Native students. It presents a model for the effective use of instructional technology in Alaska. In addition, the Museum Project is helping to preserve Yup'ik culture by recording information about Eskimo artifacts that are found throughout Alaska and in museums all over the world. These treasures will now be accessible to future generations of Native and non-Native students through the use of the computer/videodisc technology.

The Alaskan Context

When thinking about Alaska, people often focus on larger-than-life images: erupting volcanos spewing clouds of ash that imperil air transportation; huge glaciers guarding the Alaskan shores; endless tracts of uninhabitable land bordered by an

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Barry M. Sponder
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

RC 018667

BEST COPY AVAILABLE

oil-rich coastline; whales stranded in the ice in Barrow; an endless stream of oil from the Exxon Valdez nearly destroying the state's fishing industry; the midnight sun ablaze in the summer sky; and long winter nights illuminated by the northern lights. It is clear that the Alaskan context is truly remarkable. Some of the common misconceptions about the state are that Eskimos live in igloos — they don't; that Alaska is all ice and snow — it isn't; and that the state is isolated from the rest of the country — it's not. In Bethel, we watch cable television from Detroit!

Alaska, with a land mass equal to a third of the contiguous United States, has a population of approximately 560,000. The majority of Alaskans live in the three major urban areas of Anchorage (300,000), Fairbanks (35,000), and Juneau (30,000) with the rest of the population (185,000) scattered throughout the state in almost 200 communities, ranging in size from twenty-five to 5,000 people. Because over 85 percent of Alaskan communities are inaccessible by road, including the state capitol at Juneau, satellite technology has enabled Alaska to develop a strong telecommunications infrastructure which unites rural communities with large urban areas. In addition, telecommunications technology allows college courses to be offered to students at remote locations, primarily through the use of audio conferencing (i.e., teaching over the telephone).

Alaska Natives

Almost 25 percent of rural residents are Alaska Natives. This 25 percent represents more than twenty different ethnic groups with unique languages, cultures, and traditional lifestyles. Many Alaska Natives have been fortunate to be isolated from urban areas and have kept much of their culture intact, although the dominant society regularly intrudes on traditional values in the name of modernization. The effects of acculturation on Alaska Natives have often been devastating, resulting in chronic alcoholism, suicide, and the erosion of traditional Native values. (Alaska Federation of Natives, 1989)

Western Education for Alaska Natives

From the first schools operated by Russian missionaries to the current state operated school system, education for Alaska Natives has usually meant westernization and alienation from their cultural identity. (Collier, Jr. 1973) Only recently have Alaskan educators focused on developing culturally relevant programs for Native students through government-mandated, bilingual education and locally designed cross-cultural programs. However, these innovations have yet to make a difference in the overall achievement of Alaska Native students. "Native children enter and exit village schools with serious educational handicaps and their education is worse than mediocre." (Alaska Federation of Natives, 1989) Less than 4 percent of the Alaska Natives who finish high school graduate from college compared to 24 percent of the overall Alaskan population, a statistic which underscores Native students' lack of success the further they try to travel up the education ladder. (Kleinfeld, Gorsuch & Kerr, 1988)

Oil is Well in Rural Alaska

The Alaska Native Claims Settlement Act (ANCSA) of 1971 resolved Native land claims against the federal government and permitted the building of the TransAlaska pipeline (1974) which fueled an unprecedented ten-year economic boom for all Alaskans. ANCSA and the TransAlaska pipeline have had the most impact on the economics, politics, lifestyles, education, and cultural identity of Native groups. Native villages have won significant court battles in their attempt to receive educational services that are equal to those of large urban areas and forced the state government to build schools in small villages throughout Alaska. Rural Alaskans also had enough political clout to force the creation of regional college campuses that offered on-site and distance delivered courses for students who wanted to earn a college degree while living in isolated rural villages.

Native Teachers for Native Students

Many educators felt that the empowerment of Alaska Natives would be facilitated by having more certificated Native teachers in rural classrooms. To accomplish this goal the University of Alaska-Fairbanks created an innovative teacher education program in the early 1970s that allowed Native students to earn a teacher education degree in their villages. The program is delivered to rural students through a combination of audio conferencing, site visits by teachers, and field-based experiences in rural Alaskan schools. Despite the limited success of the program, the overwhelming majority of Alaskan teachers (85 percent) are trained and hired from outside the state while less than 3 percent of all classroom teachers are Alaska Natives.

Distance Education in Alaska

The development of telecomm unications-based, distance education programs in Alaska was fueled by the 1975-1985 oil boom. Off-campus college programs were created with many of the same limitations that hampered on-campus courses. Most courses had little or no cross-cultural relevancy, and most materials were developed outside of Alaska. There was little attention given to providing students with different learning alternatives since distance education meant either correspondence courses or audio conferencing over the telephone. Neither format was successful in giving students the interactive multimedia experiences that many educators saw as one part of the solution for improving the performance of Alaska Native students. (Barnhardt, 1979)

A Foundation for Interactive Learning

Responding to the call for more culturally relevant interactive programs, we investigated the use of computer applications for teacher education and distance delivery courses. We wanted to help students learn to use the computer and associated technologies to meet their own educational goals in an exciting and

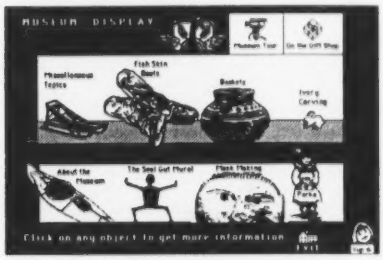

Figure 2: The main menu of the Yugtarvik Regional Museum *HyperCard* program pictures a museum display case. The menu items were generated by students' interest in various museum artifacts.

culturally appropriate way. If students were able to control the media, they could effectively enhance their own learning behavior. Students in distance education courses would be less dependent on learning over the telephone and more likely to become self-learners through an on-site interactive multimedia system. The theme for the interactive learning system was the Bethel Yugtarvik Museum and its exhibits. With our assistance, Alaska Native and non-Native college students designed and programmed *HyperCard* presentations about the Yugtarvik museum exhibits and many other elements of Yup'ik Eskimo culture. (See Figure 2.)

HyperCard

A promising tool for developing Alaska-specific materials turned out to be Apple's *HyperCard* program which is included with every new Macintosh computer. The program has already enabled thousands of Macintosh users to develop their own simple *HyperCard* stacks of information, many in foreign languages as diverse as Russian and Chinese. Programming *HyperCard* is not difficult because it builds on the graphic interface of the Macintosh itself. *HyperCard* represents a series of index cards on a computer screen that can be manipulated and programmed in many creative ways with a minimal amount of technical knowledge. It has simple programmable buttons that can link cards together, create animation, or play sounds. *HyperCard* makes the computer a powerful, open-ended tool because the user no longer needs to know complex computer languages to make the computer perform. *HyperCard* is extraordinary because it makes programming the computer almost an ordinary task.

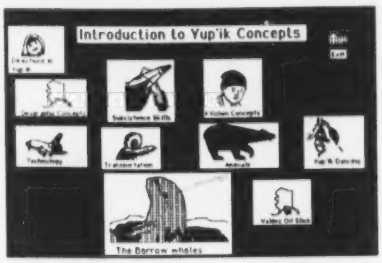

Figure 3: The main menu of the Introduction to Yup'ik Concepts *HyperCard* program. This was our first *HyperCard* stack which eventually led to the development of the Yugtarvik Museum Project.

HyperCard appeared to be an ideal tool for prospective teachers. People who could program *HyperCard* applications for their classroom and teach their students to use them would bring something unique to rural Alaskan villages. Kuskokwim Campus has many teacher education students, and there are scores of teachers in Bethel, so we started to offer *HyperCard* courses for educators.

HyperCard for Distance Education

HyperCard also appeared to be an ideal way to offer additional instructional materials for students in distance education courses. Teachers could prepare lessons on *HyperCard* to cover important concepts using Alaska-specific examples instead of relying on materials developed in the lower forty-eight states. For example, a freshman biology course could include a series of *HyperCard* presentations of basic science concepts such as diffusion, cell structure, and basic anatomy which are necessary for a fundamental understanding of other scientific concepts. The *HyperCard* lessons would illustrate universal concepts with locally-relevant examples. Students could then be free to interact with the computer and review the concepts as often as needed for comprehension.

An Early *HyperCard* Program

Our first use of *HyperCard* was to develop a simple program of cultural concepts to support an on-campus introductory Yup'ik language course. The course uses an oral presentation approach of Yup'ik through actions and commands. This method has helped the course go from the least popular on campus to one of the most popular we offered. Unfortunately, there was little reinforcement for the concepts except through audiotapes which were often difficult to follow. One of the students enrolled in the course remarked that he'd like to see the language concepts reinforced in another way. Bingo! Over the next two weeks, we developed a demonstration *HyperCard* program that presented simple concepts such as "Kitchen Concepts" and "Transportation." (See Figure 3.) We even added a section about the whales that were stranded in the ice in Barrow since it was in the news and of great interest to students. We also added sound to the stack by means of the *MacRecorder* program which uses an external microphone and computer program that make it easy to put sound into *HyperCard* stacks. When we demonstrated the program to students, they were very excited about using it.

Interactive Media

HyperCard is also useful as a front-end for interactive multimedia. This usually involves connecting a com-

puter to an ancillary device such as a videotape or videodisc machine. Older Macintosh models such as the Mac Plus and the Mac SE are unable to display videodisc output on their screens, so a second monitor is needed for the interactive system. The Amiga computer is often used for interactive video because it can display videodisc pictures on the computer screen, but the computer is more difficult for the average person to program than the Macintosh. A *HyperCard*-type program for the Amiga is under development but has yet to be released.

Videodiscs are capable of storing huge amounts of visual data, 54,000 frames of information on each side of a two-sided disc, which can contain one-half hour of continuous motion video, 54,000 slide pictures, or any combination of the two. However, video segments are usually only several seconds in length. Access time for any individual frame on a videodisc is usually between 1.5 and 3 seconds, depending on the videodisc machine in use. While there are hundreds of commercially-developed videodiscs on the market, we knew that we would eventually have to develop our own Alaska-specific videodisc.

Another advantage of the videodisc is its dual audio track. Each track can carry a separate narration sequence which makes the videodisc a perfect tool for bilingual audiences. The videodisc we designed would carry both English and Yup'ik language audio tracks, enabling the presentation to reach the widest possible audience in western Alaska.

The Yugtarvik Museum Project

The next step in developing a culturally appropriate, interactive program for prospective teachers was to decide on a theme that was flexible and interesting. We decided to use the Bethel Yugtarvik Museum as the focus of the program. The museum is a rustic place, housed in an old log cabin with a leaky roof, and filled with many makeshift displays. It has the delicious aroma of dried salmon mixed with the scent of tanned fur and basket grass. The building itself consists of less than 700 square feet, and it is crammed full of artifacts such as baskets, parkas, mukluks, masks, drums, ivory, kayaks, and more. (See Figure 4.) Some of the displays have small information cards, but many displays have only titles. There is also a little gift shop which displays crafts by local artisans and offers a small selection of books about Eskimos and other Alaska Natives. Most visitors to Bethel manage to visit the museum, but usually stay less than an hour because not much written information is available about the crafts on display. We believed that it would be beneficial to put the information about the museum on *HyperCard* s that when visitors came to Bethel they could learn about Eskimo culture while they were there.

Other possible uses for the project quickly came to mind, such as making a videodisc of the museum's displays and getting pictures of objects from other museums worldwide. The addition of materials from other museums would technologically enhance the Yugtarvik collection. We thought, why not place the system in rural village schools and have the teachers use the program in the Foxfire tradition. Students would be able to interview their parents and elders and then include the information about their cultural heritage, with pictures, in a *HyperCard* stack. We could teach our pre-service and in-service teachers to use *HyperCard* and they could program the Yugtarvik museum *HyperCard*/videodisc to fit their own village context. We could also use similar interactive systems to support our distance education audio conference courses. This system is easily adaptable for presenting any course content as long as the teacher is given enough time to develop the program.

The Videodisc

Developing interest in the project among our university colleagues was difficult. We ran into the brick wall of "that's nice, get a grant." It seemed as though the project was only worthwhile if someone else offered to fund it. The development of an educational product was not considered a legitimate research function in the tradition of a control-group study, correlation research, or the discovery of a new superconductivity material, but rather was seen by many as a clever way to obtain new equipment for the office.

We wanted to make a videodisc about the museum which required producing a broadcast-quality videotape that could be turned into a videodisc. Several companies around the country specialize in converting tapes into videodiscs, but the cost was a bit more than petty cash would cover. Most companies charge approximately $1,800 to press one side of a master videodisc (one-half hour of continuous video), which would then be used to make other discs. Additional videodiscs were incrementally priced at approximately $30 each for the next 100 discs, to $10 each for the production of 500 additional discs.

We wanted to do our own videotaping and editing and planned to use an Amiga 2000 computer to generate titles and graphics. The Amiga is ideal for producing video overlays because of its unique color and graphics capabilities. It was difficult to get started because we didn't have a three-quarter inch videotape camera, proper editing equipment, or funding to pay for the videotape production. As university professors we had our courses to teach, and the tremendous amount of time needed to develop an interactive project did not seem to fit the research portion of our workload. We applied for a university grant to get the project going but were turned down because the university doesn't purchase equipment for other organizations such as the Yugtarvik Museum.

Fortunately, we found that some people in Anchorage were using the Amiga computer for interactive displays, and we contacted one of them, Terry LaGrone of Flight Training Devices-Alaska. Terry had made a big contribution to interactive pro-

(Continued on page 42)

gramming by developing the PILOT language for the Amiga enabling the computer to effectively create interactive displays using only one monitor — a distinct advantage over the Macintosh. We spent time discussing the various strengths of the Macintosh versus the Amiga for interactive multimedia applications. We recounted our plans to eventually place images of the Yugtarvik Regional museum's collection on a *HyperCard* stack with a videodisc component. Terry preferred the Amiga because it could do the job

Figure 4: Basket making display at the Yugtarvik Regional Museum.

with only one screen, even though it didn't have quite the bells and whistles of *HyperCard*. However, we ultimately decided that the graphics, sound, and easy programmability of *HyperCard* were hard to beat, especially since a *HyperCard* program could be used alone if a student did not have access to a videodisc machine.

Weeks later, we received a surprise offer from Flight Training Devices-Alaska. They were producing a commercial videodisc as part of an interactive display for tourists at the Anchorage International Airport. They planned to sell advertising space to enterprises such as restaurants, vacation lodges, hotels, ski resorts, tour guides, and other local businesses. Interactive displays could present a variety of information in a short time and had proven very successful in other locations. Approximately five minutes of unused time remained on the videodisc, and Terry thought that video from the museum would help demonstrate additional capabilities of interactive video. He offered us free time on the videodisc — all we had to do was supply five minutes of finished videotape. That was an eternity! We had the option of filling five minutes of videodisc space with 8,000 slides of Yup'ik

Figure 5: The basket menu in the *HyperCard* program corresponds to the videodisc image in Figure 6. Students are able to examine a picture of the object and learn about different aspects of basket making from the *HyperCard* program.

crafts or combining several seconds of short motion segments with slides. Well, sweat equity wasn't so bad, and we didn't need a grant to get the project started.

Education 429

The *HyperCard* portion of the program proved easy to develop. We were offering a course in using computers in schools, Education 429, and decided to use the Yugtarvik Museum as the focus of the course. The development of the museum *HyperCard* program became a course project. Students in the class immediately saw the value of the undertaking and were enthusiastic about developing a Yup'ik computer application. Ten students enrolled in the course, most of whom were Yup'ik while the others were non-Native residents of the community. Two employees from the museum were in the class and they provided much of the cultural expertise that the other students needed.

All of the course objectives were met while students developed their own *HyperCard* stacks based upon their interest in one or more of the museum's displays. Topics included fish-skin boots, ivory carving, basket making, traditional medicine, doll making, mask making, parkas, and miscellaneous topics. One student used a database program to compile a record of the museum's contents. (See Figures 5 and 6.) Students worked on their projects individually and as part of a design team. They learned the principles of visual presentation and how to design instructional displays for the classroom. They practiced writing for different audiences since the museum was likely to get visits from tourists, college students, schoolchildren, as well as elders who had little formal schooling and preferred to speak Yup'ik. Students also critiqued each other's work and helped one another polish up their grammar. Many of the students spoke English as their second language and profited from the project-based approach to writing.

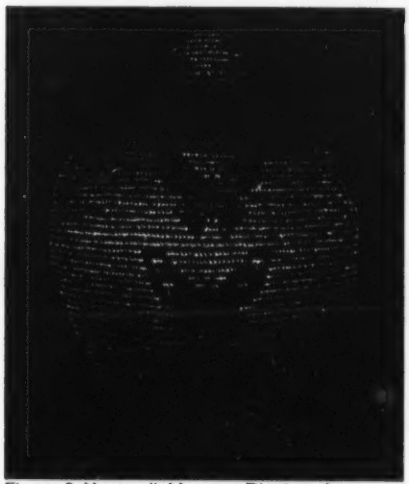

Figure 6: Yugtarvik Museum Display of a basket with a traditional butterfly pattern.

We ran into the controversial issues of censorship and responsibility when one student discovered that her presentation included potentially harmful information — a traditional Eskimo medicine could be used as a hallucinogen. Should she include that fact in the *HyperCard* stack? What if a youngster learned about this plant through the program and decided to use the easily

BEST COPY AVAILABLE

available herb to get high? What was our responsibility in the matter? The class had a heated discussion about whether the information should be included. (It wasn't.) Other items proved to be just as sticky, but students were able to come to terms with the implications of their choices.

The class context was an important part of the learning experience. Not only did students learn computer applications for the classroom, but they also gained experience in working together cooperatively as a group. The course curriculum touched many subject areas such as history, biology, language arts, traditional Native culture, and graphic arts on the com-

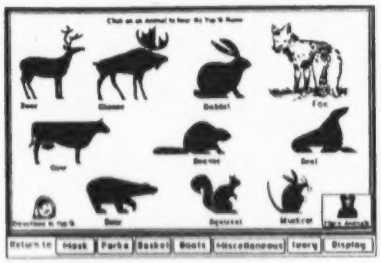

Figure 7: *HyperCard* makes it easy to combine sound with pictures. By clicking on a picture, users will hear the Yup'ik word for the animal.

puter. The class provided students with experiences that reinforced their self-esteem and emphasized the importance of Yup'ik culture and language in the classroom. (Figure 7) At the same time, the course satisfied the goals of western-oriented education for Native and non-Native students.

We also wanted to include computer animation in the Yugtarvik Museum Project to demonstrate traditional practices such as skin sewing and mask carving. While *HyperCard* permits very simple animation, the graphics and motion capabilities of *VideoWorks II* and *Studio 1* made it possible to include more sophisticated and complex sequences in the *HyperCard* program. Each animation program has certain strengths. *VideoWorks II* has better sound capability and permits many more objects to be in motion at one time than does *Studio 1*. However, *VideoWorks II* requires a separate program, *VideoWorks II HyperCard Driver*, to make animations work with *HyperCard*. *Studio 1* can provide many of the same effects as *VideoWorks II*, but it does not need an additional program to operate with *HyperCard*. We decided to use *VideoWorks II* for the main display in the museum and scaled back on some of our animation sequences for the distributed version of the program. (See Figure 8.)

The Videodisc

During the summer, after the first phase of the *HyperCard* project was complete, we began to develop our videodisc. We contacted Ted Simmons, a media specialist who was interested in developing a videodisc about Alaska. He was eager to participate and worked with us after hours and on weekends. His video production expertise and access to professional-quality equipment was necessary for producing our broadcast-quality videotape.

Because it was summer, we had enough time to spend several days at the museum videotaping baskets, kayaks, masks, boots, parkas, drums, dolls, and anything else that people had put in their *HyperCard* stacks. Ted knew how to get the best lighting and shot selection for the broadcast-quality video, which a less-experienced camera person might have overlooked. After several days we had over three hours of video that we edited into five minutes of finished tape. Terry LaGrone gave us an early Christmas present when he discovered that his portion of the program proved to be too ambitious, and he had only half of the videodisc filled. He offered us the rest of the videodisc space for the Yugtarvik Museum Project. We searched through Ted's other videotapes about Yup'ik culture and found several good examples of Yup'ik dancing, sled building, skin sewing, and village travel. We produced fifteen minutes of edited video with graphics and titles added to several segments of the production.

We sent the tape to Terry for final production at the Videoplex in Anchorage. The Videoplex has state-of-the-art computer equipment that can be used for video production, for editing, and for generating sophisticated computer graphics. Our video-

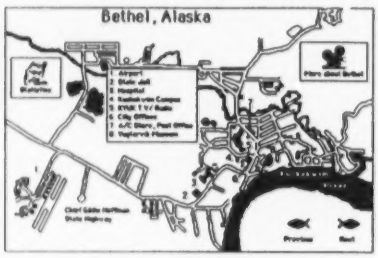

Figure 8: Animation in *HyperCard* is greatly enhanced by the use of the additonal programs such as *VideoWorks II* and *Studio 1*. The following sequence is from a *Videoworks II* animation segment about the city of Bethel. Clicking on the "More about Bethel" button calls up the *VideoWorks II* presentation.

tape was combined with the commercial segment into a half hour mastertape which was sent to Philips & Dupont Optical Company in Wilmington, Delaware, for pressing into a finished videodisc.

The Results

Several weeks passed before we received a finished copy of the videodisc. It worked smoothly with the *HyperCard* application, and we were amazed at how easily the two technologies interfaced. We used the commercial *HyperCard* application *Voyager Videostack* and its many predefined programming functions to help us interface the Yugtarvik Museum program with the videodisc.

We connected our Mac Plus computer to a Pioneer 4200 videodisc player. The Pioneer 4200 is capable of generating overlay text on the monitor, over the videodisc picture, which allowed us to customize the program to fit different audiences. For example, one button on a card about baskets was programmed to display text for elementary school students, while

pressing another button on the card presented information about the same basket for a college audience. Clicking on a third button displayed the information in Yup'ik.

We demonstrated the *Yugtarvik Museum Program* for our university colleagues, local school districts, and professional organizations. All of the audiences were very enthusiastic and envisioned their own uses for this system. The power that interactive multimedia portends is often overwhelming, and people have come to us for help to get their own projects started. For example, the Alaska Energy Authority has expressed interest in having us design a training system for the repair of rural village power plants. Many of these plants lack proper maintenance, and an interactive system placed in a village could be a good maintenance and troubleshooting tool to replace the ponderous, unreadable, technical manual.

We recently received a United States Department of Education grant to develop a videodisc presenting universal science concepts using the Yup'ik Eskimo context to teach general biology to nursing students in western Alaska. This system, a direct spinoff of the Yugtarvik Museum Project, will be used for both on-campus and distance delivery courses.

Problems

A major obstacle that hinders the development of a project such as this one is the traditional view of research and education held by university educators and administrators. "The purpose of educational research is not to develop new products, but rather to discover new knowledge (through basic research) or to answer specific questions about practical problems (through applied research)." (Borg and Gall, 1983) Other forms of research such as educational product development tend to fall outside of these narrow parameters and, consequently, have little credibility in traditional circles. However, "educational research and development...appear to be the most promising [strategies] we now have for improving education...because [they develop a product] in the setting where it will be [eventually] used." Changing the attitudes of university trained professionals has proven more difficult than developing the actual product.

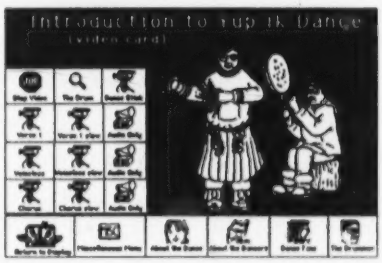

Figure 9: Yup'ik dancing is an excellent topic for an interactive *HyperCard*/videodisc system. Using *HyperCard*, students can observe complicated dance movements either in real-time or slow motion sequences.

Future Uses

The future of programs such as the Yugtarvik Museum Project is directly related to the willingness of educators to recognize the possibilities available through constantly changing technologies. The interactive videodisc presentation can be transmitted over the telephone line for simultaneous broadcasting at many different locations. Such a system would enhance distance delivered education since students would be able both to receive an expert presentation of material and then work with the materials at their own pace outside of class.

The Alaska Civil Air Patrol is considering the development of an interactive system which would visually display the perilous landing conditions at rural village airports and provide experienced-based advice on proper landing procedures. Air fatalities in Alaska are an all-too-common occurrence, and if pilots were able to preview unfamiliar landing strips and weather conditions, perhaps fewer accidents would take place.

Rural locations served by university trained, village health aides could use an interactive system for diagnosing and treating emergency illnesses and accidents. Because many isolated villages are unapproachable during inclement weather or during spring breakup and because telecommunications are always subject to failure, adequate health care becomes a primary concern of rural Alaskans. We are now developing similar programs for both the Apple IIGS and MS-DOS machines.

Conclusion

The Yugtarvik Museum Project has demonstrated that interactive media can be successfully adapted to meet the educational goals of culturally relevant instruction and standard course objectives. The greatest obstacle to developing educational products such as this one are the attitudes of many university educators and administrators about the legitimacy of technological research. With the proper support, university faculty can make a valuable contribution to the growing body of research about the effectiveness of different kinds of mediated instruction, and they can continue to develop products for classroom use.

While developing programs for Alaska Native students has proven to be both motivating and challenging, teaching students to develop their own multimedia applications has been the real benefit of the Yugtarvik Museum Project. In the future, students should be able to have more control of their learning through the growing availability of *HyperCard*-style applications for all computers and through other technologies such as CD-ROM and videodisc.

Barry Sponder
Associate Professor of Education
University of Alaska-Fairbanks, Kuskokwim Campus
BITNET: LFBMS@ALASKA
Dennis Schall
Assistant Professor of Education
University of Alaska-Fairbanks, Kuskokwim Campus
BITNET: FFDGS1@ALASKA

Yugtarvik Museum Project

REFERENCES

Alaska Federation of Natives. *The AFN report on the Status of Alaska Natives: A Call for Action.* Anchorage, Alaska: Alaska Federation of Natives. (1989).

Barnhardt, R. *Culture, Community, and the Curriculum.* Fairbanks, Alaska: Center for Cross-Cultural Studies, University of Alaska Fairbanks. (1979).

Borg, W. R., and M. D. Gall. *Educational Research: An introduction* 4th Ed. New York: Longman (1983).

Chen, Ching-chih. "The First Emperor of China's Ancient World Uncovered: From Xian to Your Electronic Screen." *Academic Computing.* 3: 7 (March, 1989).

Collier, J., Jr. *Alaskan Eskimo Education: A Film Analysis of Cultural Confrontation in the Schools.* New York: Holt, Rinehart & Winston. (1973).

Kleinfeld J., L. Gorsuch, and J. Kerr. *Minorities in Higher Education: Alaska.* Fairbanks, Alaska: Institute of Social and Economic Research, University of Alaska (1988).

Reaching Students, Reaching Resources

CONTACTS

For more information about the Annenberg/CPB Project, its projects, and its funding Initiative, you may write to:

The Annenberg/CPB Project
901 E Street N.W.
Washington, DC 20004

Two useful references on technology-based efforts to reach the New Majority are the *American Journal of Distance Education* and the *Online Journal of Distance Education.* A recent book on the using computer conferencing for teaching at a distance is *Mindweave: Communication, Computers and Distance Education.* Robin Mason and Anthony Kaye (Eds.) Oxford and NY: Pergamon (1989).

REFERENCES

Bouton, Clark, and Russell Garth (Eds). *Learning in Groups.* San Francisco: Jossey-Bass, 1983.

FIPSE Technology Study Group's *Ivory Towers, Silicon Basements: Learner-Centered Computing in Postsecondary Education.* McKinney, TX: Academic Computing (1988).

Gilcher, Kay, and Sally Johnstone. "A Critical Review of the Use of Audiographic Conferencing Systems by Selected Educational Institutions," College Park, MD: University College of the University of Maryland (1989).

McCartan, Anne-Marie. "Students Who Work: Are They Paying Too High a Price?" *Change.* (September, 1988) 11-20.

Pew Higher Education Research Program. "Breaking the Mold," *Policy Perspectives.* II: 2, (January, 1990).

Starr, Roxanne Hiltz. "Correlates of Learning in a Virtual Classroom," *Research Report CIS-89-22.* Newark: New Jersey Institute of Technology (1989).

Study Group on the Conditions of Excellence in Higher Education. *Involvement in Learning: Realizing the Potential of American Higher Education.* Washington, DC: National Institute of Education (1984).

Square Books and Round Books

REFERENCES

Bigelow, J. "Hypertext and Case," *IEEE Software* (March 1988) 23-27.

Burke, J. *The Day the Universe Changed.* Boston: Little, Brown and Company (1986).

Bush, V. "As We May Think," *Atlantic Monthly.* 176 (July 1945), 101-108.

Eisenstein, E. *The Printing Press as an Agent of Change: Communication and Cultural Transformations in Early-Modern Europe. Vols. I and II.* Cambridge: Cambridge University Press (1979).

Englebart, D. "A Conceptual Framework for the Augmentation of Man's Intellect," in P. W. Howerton and D. C. Weeks (Eds.) *Vistas in Information Handling.* 1 London: Spartan Books (1963).

Neuwirth, C., and D. Kaufer. "The Role of External Representation in the Writing Process: Implications for the Design of Hypertext-Based Writing Tools," *Proceedings, Hypertext '89.* 319-341.

Smith, J. "A Hypertext Writing Environment and its Cognitive Basis," *Proceedings, Hypertext '87.* 195-214.

Designing Instruction

REFERENCES

Adelson, B. and E. Soloway. "The Role of Domain Experience in Software Design," *IEEE Transactions on Software Engineering.* SE-11: 11 (1985) 1351-1360.

Beshears, F. "LabView Forum Introduces Software for Real-time Data," *Instructional Technology Program Newsletter.* (A publication of the Instructional Technology Program, University of California, Berkeley) 3: 1 (1990). 3.

Brown, A. L., and A. S. Palincsar. *Reciprocal Teaching of Comprehension Strategies: A Natural History of One Program for Enhancing Learning.* (1987).

Christensen, C. R. *Teaching and the Case Study Method: Text, Cases, and Readings.* Boston, MA: Harvard Business School (1987).

Collins, A., J. S. Brown, and S. E. Newman. "Cognitive Apprenticeship: Teaching the Craft of Reading, Writing, and Mathematics," in L. B. Resnick (Ed.), *Cognition and Instruction: Issues and Agendas.* Hillsdale, NJ: Lawrence Erlbaum Associates (1989).

Eylon, B. and M. C. Linn. "Learning and Instruction: An Examination of Four Research Perspectives in Science Education." *Review of Educational Research.* 58: 3 (1989) 251-301.

Gallagher, A. R. *The Methods Book: Strategies for Law-focused Education.* Chicago, Il: Law in American Society Foundation (1979).

Gerlach, R. A. and L. W. Lamprecht. *Teaching About the Law.* Cincinnati, OH: The W.H. Anderson Company (1975).

Greeno, J. G. "Advancing Cognitive Science through Development of Advanced Instructional Systems," *Machine Mediated Learning.* 1: 4 (1986) 327-43.

Husic, F., M. C. Linn, and K. D. Sloane. "Adapting Instruction to the Cognitive Demands of Learning to Program," *Journal of Educational Psychology* (1990).

Kuo, F. "Learning Science by Modelling," *Instructional Technology Program Newsletter* (A publication of the Instructional Technology Program, University of California, Berkeley) 1: 1 (1988) 2.

Lan, H. "Computer-Aided Engineering," *Instructional Technology Program Newsletter* (A publication of the Instructional Technology Program, University of California, Berkeley), 2: 4 (1989a) 3.

Lan, H. (1989b). Engineering design courses to be revitalized. Instructional Technology Program Newsletter (A publication of the Instructional Technology Program, University of California, Berkeley), 2(3), 4.

Leinhardt, G., and J. G. Greeno. "The Cognitive Skill of Teaching," *Journal of Educational Psychology.* 78 (1986) 75-95.

Lepper, M. R. "Microcomputers in Education: Motivational and Social Issues," *American Psychologist.* 40 (1985) 1-18.

Linn, M., K. Ribet, and A. Schoenfeld. *Calculus and Computers: Toward a Curriculum for the 1990s.* University of California, Berkeley (1989).

Linn, M. C. and M. J. Clancy. *Can Experts' Explanations Help Students Develop Program Design Skills?* (1988).

McGrath, O. "Architects Use Graphic Design Software to Win Competitions." *Instructional Technology Program Newsletter* (A publication of the Instructional Technology Program, University of California, Berkeley) 2: 5 (1989a) 1.

McGrath, O. "DEC Gift Helps Students Learn Computeraided Optimal Design," *Instructional Technology Program Newsletter* (A publication of the Instructional Technology Program, University of California, Berkeley) 5: 5 (1989b) 2.

Schank, P., M. Linn, and M. Clancy. *How Does an Online Template Library Help Students Learn Pascal?* (in preparation).

Schmidt, H. G., and M. L. De Volder. *Tutorials in Problem-based Learning: New Directions in Training for the Health Professions.* Assen, The Netherlands: Van Gorcum and Company (1984).

Schnelle, K. E. *Case Analysis and Business Problem Solving.* New York, NY: McGraw-Hill Book Company (1967).

Sleeman, D., and J. S. Brown. (Eds.). "Intelligent Tutoring Systems," *Computers and People Series.* New York: Academic Press (1982).

Spohrer, J. C., and E. Soloway. "Novice Mistakes: Are the Folk Wisdoms Correct?" *Communications of the ACM.* 29 (1986) 624-632.

BEST COPY AVAILABLE